

PROJECT ADMINISTRATION DATA SHEET



ORIGINAL



REVISION NO. _____

Project No. A-3902GTRI/~~SKK~~DATE 8 / 7 / 84Project Director: Barry J. Cown~~School~~ Lab

ECSL/EED

Sponsor: Teledyne Brown EngineeringType Agreement: P.O. No. 229100Award Period: From 4/1/84 To 7/15/84 (Performance) 7/15/84 (Reports)

Sponsor Amount:

This ChangeTotal to DateEstimated: \$ 2,250\$ 2,250Funded: \$ 2,250\$ 2,250Cost Sharing Amount: \$ NoneCost Sharing No: N/ATitle: RF Transmission Measurements

ADMINISTRATIVE DATA

OCA Contact

Brian J. Lindberg X4820

1) Sponsor Technical Contact:

2) Sponsor Admin/Contractual Matters:

M. W. Ashley, BuyerM. W. Ashley, BuyerTeledyne Brown EngineeringTeledyne Brown Engineering300 Sparkman Drive300 Sparkman DriveHuntsville, AL 35807Huntsville, AL 35807Defense Priority Rating: N/AMilitary Security Classification: N/A(or) Company/Industrial Proprietary: N/A

RESTRICTIONS

See Attached N/A Supplemental Information Sheet for Additional Requirements.

Travel: Foreign travel must have prior approval -- Contact OCA in each case. Domestic travel requires sponsor approval where total will exceed greater of \$500 or 125% of approved proposal budget category.

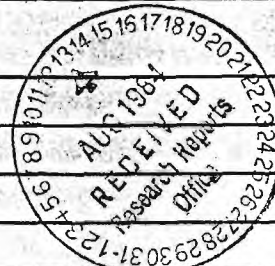
Equipment: Title vests with N/A

COMMENTS:

COPIES TO:

Project Director (Cown)
Research Administrative Network
Research Property Management
AccountingProcurement/EES Supply Services
Research Security Services
Reports Coordinator (OCA)
Research Communications (2)

Sponsor I.D. #01.219.000.85N020

GTRI
Library
Project File
Other I. Newton

SPONSORED PROJECT TERMINATION/CLOSEOUT SHEETDate 10/4/84Project No. A-3902~~XXXX~~ School/Lab ECSL/EED

Includes Subproject No.(s) _____

Project Director(s) Barry J. CownGTRI / ~~XXX~~Sponsor Teledyne Brown EngineeringTitle RF Transmission MeasurementsEffective Completion Date: 7/15/84 (Performance) 7/15/84 (Reports)

Grant/Contract Closeout Actions Remaining:

- ☐ None
- ☒ Final Invoice or Final Fiscal Report
- ☐ Closing Documents
- ☐ Final Report of Inventions
- ☐ Govt. Property Inventory & Related Certificate
- ☐ Classified Material Certificate
- ☐ Other _____

Continues Project No. _____

Continued by Project No. _____

COPIES TO:

Project Director
Research Administrative Network
Research Property Management
Accounting
Procurement/EES Supply Services
Research Security Services
Reports Coordinator (OCA)
Legal Services

Library
GTRI
Research Communications (2)
Project File
Other A. Jones



Georgia Institute of Technology
ENGINEERING EXPERIMENT STATION
Atlanta, Georgia 30332

A-3902

13 September 1984

Teledyne Brown Engineering
300 Sparkman Drive
Huntsville, Alabama 35807

Attention: Mr. M. W. Ashley, Buyer

Reference: Purchase Order No. 229100
(Georgia Tech Project A-3902)


Title: RF Transmission Measurements

Subject: Testing of Tan and Greige Camouflage Cloths
Final Letter Report

Gentlemen:

As per our conversation, the transmission data--amplitude and phase--of the tan knit and the S726 cloths is attached. The first sample received is labeled as Teledyne Brown Cloth and is the tan camouflage cloth. Teledyne Brown Engineering (TBE) S726, the greige woven cloth, is labeled as such. Both samples were measured in two orientations. Vertical corresponds to the warp direction; horizontal corresponds to the fill direction. Any misread data points are labeled as bad points. Questions regarding the data can be directed to me at (404) 894-6193.

Respectfully submitted,

 Amy S. Dean
Project Director

Approved:

Charles E. Ryan, Jr.
Chief,
EM Effectiveness Division

Attachment

Freq (GHz)	S_{21} (dB, deg)	
5.0000(G)	-3.45 /	1.50
5.1000(G)	-3.64 /	3.90
5.2000(G)	-3.20 /	-5.10
5.3000(G)	-4.50 /	1.10
5.4000(G)	-3.87 /	4.80
5.5000(G)	-4.18 /	.20
5.6000(G)	-4.03 /	2.30
5.7000(G)	-3.97 /	-4.80
5.8000(G)	-4.63 /	2.00
5.9000(G)	-3.44 /	3.10
6.0000(G)	-4.64 /	1.60
6.1000(G)	-4.12 /	3.20
6.2000(G)	-3.86 /	-7.70
6.3000(G)	-4.57 /	1.80
6.4000(G)	-3.04 /	1.90
6.5000(G)	-4.33 /	-.10
6.6000(G)	-3.74 /	6.20
6.7000(G)	-3.15 /	-1.90
6.8000(G)	-3.95 /	5.30
6.9000(G)	-3.31 /	5.80
7.0000(G)	-3.95 /	2.80
7.1000(G)	-2.97 /	9.30
7.2000(G)	-3.64 /	-.80
7.3000(G)	-4.26 /	8.60
7.4000(G)	-2.89 /	2.40
7.5000(G)	-4.34 /	1.00
7.6000(G)	-2.98 /	8.20
7.7000(G)	-3.41 /	-6.50
7.8000(G)	-4.38 /	2.80
7.9000(G)	-2.86 /	-.50
8.0000(G)	-3.80 /	.30
8.1000(G)	-2.85 /	6.00
8.2000(G)	-3.08 /	-4.60
8.3000(G)	-3.36 /	3.00
8.4000(G)	-2.48 /	2.50
8.5000(G)	-3.53 /	3.40
8.6000(G)	-2.68 /	7.10
8.7000(G)	-3.42 /	-1.30
8.8000(G)	-3.42 /	7.40
8.9000(G)	-2.79 /	1.10
9.0000(G)	-3.69 /	6.20
9.1000(G)	-2.61 /	6.10
9.2000(G)	-3.26 /	-.90
9.3000(G)	-2.81 /	6.10
9.4000(G)	-3.07 /	1.80
9.5000(G)	-3.53 /	6.60
9.6000(G)	-2.15 /	-1.70
9.7000(G)	-3.09 /	-3.00
9.8000(G)	-2.32 /	2.80
9.9000(G)	-3.20 /	-3.20
10.0000(G)	-2.97 /	2.80
10.1000(G)	-2.07 /	-2.90
10.2000(G)	-3.13 /	-.90
10.3000(G)	-2.87 /	-1.40
10.4000(G)	-3.27 /	-2.00

Figure 1. Teledyne Brown cloth (tan net), vertical, broadband.

Freq (GHz)	S_{21} (dB, deg)	
10.5000(G)	-2.30 /	1.30
10.6000(G)	-2.47 /	-1.80
10.7000(G)	-2.75 /	3.40
10.8000(G)	-2.42 /	-2.80
10.9000(G)	-2.96 /	.90
11.0000(G)	-1.92 /	3.60
11.1000(G)	-2.58 /	-.20
11.2000(G)	-2.70 /	2.10
11.3000(G)	-2.58 /	-1.20
11.4000(G)	-3.12 /	1.10
11.5000(G)	-2.57 /	.10
11.6000(G)	-2.50 /	-.10
11.7000(G)	-2.39 /	-.50
11.8000(G)	-2.76 /	-3.70
11.9000(G)	-2.76 /	-.20
12.0000(G)	-2.26 /	-2.00
12.1000(G)	-2.66 /	-2.70
12.2000(G)	-2.06 /	-4.50
12.3000(G)	-2.41 /	-5.70
12.4000(G)	-2.25 /	-.20
12.5000(G)	-2.09 /	-5.60
12.6000(G)	-2.34 /	-3.40
12.7000(G)	-1.46 /	-2.40
12.8000(G)	-2.55 /	-1.80
12.9000(G)	-2.29 /	2.30
13.0000(G)	-2.03 /	-5.10
13.1000(G)	-2.06 /	-1.20
13.2000(G)	-1.75 /	-3.90
13.3000(G)	-2.90 /	-4.00
13.4000(G)	-2.22 /	-.80
13.5000(G)	-2.23 /	-7.50
13.6000(G)	-2.83 /	-1.10
13.7000(G)	-1.80 /	-7.20
13.8000(G)	-2.88 /	-10.20
13.9000(G)	-2.06 /	-4.70
14.0000(G)	-2.33 /	-9.70
14.1000(G)	-2.54 /	-4.80
14.2000(G)	-1.49 /	-8.60
14.3000(G)	-2.29 /	-8.30
14.4000(G)	-1.82 /	-3.30
14.5000(G)	-2.11 /	-8.10
14.6000(G)	-2.01 /	-2.80
14.7000(G)	-1.65 /	-7.50
14.8000(G)	-2.73 /	-5.20
14.9000(G)	-2.06 /	-3.70
15.0000(G)	-2.85 /	-7.80
15.1000(G)	-2.40 /	-2.40
15.2000(G)	-1.86 /	-9.80
15.3000(G)	-2.89 /	-6.90
15.4000(G)	-2.08 /	-4.90
15.5000(G)	-2.88 /	-9.30
15.6000(G)	-2.10 /	-3.80
15.7000(G)	-1.76 /	-11.20
15.8000(G)	-2.71 /	-8.00
15.9000(G)	-1.93 /	-9.40

Figure 2. Teledyne Brown cloth (tan net), vertical, broadband.

Freq (GHz)	S_{21} (dB, deg)	
16.0000(G)	-2.25 /	-10.50
16.1000(G)	-2.03 /	-4.30
16.2000(G)	-1.73 /	-8.70
16.3000(G)	-2.41 /	-7.50
16.4000(G)	-1.88 /	-8.40
16.5000(G)	-1.83 /	-7.40
16.6000(G)	-1.68 /	-6.70
16.7000(G)	-2.24 /	-7.30
16.8000(G)	-2.11 /	-8.60
16.9000(G)	-2.37 /	-9.20
17.0000(G)	-2.56 /	-7.90
17.1000(G)	-1.95 /	-7.90
17.2000(G)	-2.10 /	-10.90
17.3000(G)	-2.27 /	-9.70
17.4000(G)	-2.16 /	-9.20
17.5000(G)	-2.56 /	-11.80
17.6000(G)	-1.97 /	-10.40
17.7000(G)	-1.83 /	-12.80
17.8000(L)	-3.66 /	60.50
17.9000(G)	-2.06 /	-11.50
18.0000(G)	-2.62 /	-13.40

bad pt.

Figure 3. Teledyne Brown cloth (tan net), vertical, broadband.

Freq (GHz)	S_{21} (dB, deg)	
5.0000(G)	-1.23 /	-21.30
5.1000(G)	-1.80 /	-21.40
5.2000(G)	-1.38 /	-25.10
5.3000(G)	-2.26 /	-28.10
5.4000(G)	-2.44 /	-22.80
5.5000(G)	-2.00 /	-28.30
5.6000(G)	-2.34 /	-25.20
5.7000(G)	-1.51 /	-30.50
5.8000(G)	-2.93 /	-30.90
5.9000(G)	-2.15 /	-24.20
6.0000(G)	-2.93 /	-31.10
6.1000(G)	-2.93 /	-28.30
6.2000(G)	-1.85 /	-36.80
6.3000(G)	-3.27 /	-34.60
6.4000(G)	-1.82 /	-23.00
6.5000(G)	-2.75 /	-35.50
6.6000(G)	-3.35 /	-25.60
6.7000(G)	-1.47 /	-30.20
6.8000(G)	-3.58 /	-31.00
6.9000(G)	-3.20 /	-22.20
7.0000(G)	-3.47 /	-33.70
7.1000(G)	-3.61 /	-20.50
7.2000(G)	-2.41 /	-35.20
7.3000(G)	-5.06 /	-32.10
7.4000(G)	-2.57 /	-27.10
7.5000(G)	-4.04 /	-40.60
7.6000(G)	-4.20 /	-22.40
7.7000(G)	-1.75 /	-44.70
7.8000(G)	-4.81 /	-42.00
7.9000(G)	-2.54 /	-31.10
8.0000(G)	-4.08 /	-41.80
8.1000(G)	-4.23 /	-26.30
8.2000(G)	-2.20 /	-42.60
8.3000(G)	-4.83 /	-40.20
8.4000(G)	-3.28 /	-27.40
8.5000(G)	-4.86 /	-35.40
8.6000(G)	-4.62 /	-23.30
8.7000(G)	-4.06 /	-40.60
8.8000(G)	-6.09 /	-30.80
8.9000(G)	-3.74 /	-31.50
9.0000(G)	-6.10 /	-34.80
9.1000(G)	-4.64 /	-24.30
9.2000(G)	-4.46 /	-44.70
9.3000(G)	-5.57 /	-27.40
9.4000(G)	-4.69 /	-38.20
9.5000(G)	-7.26 /	-32.10
9.6000(G)	-3.18 /	-32.90
9.7000(G)	-4.72 /	-49.10
9.8000(G)	-4.94 /	-27.10
9.9000(G)	-5.00 /	-48.60
10.0000(G)	-6.58 /	-33.80
10.1000(G)	-3.62 /	-36.70
10.2000(G)	-6.27 /	-43.90
10.3000(G)	-5.26 /	-39.20

Figure 4. Teledyne Brown cloth (tan net), horizontal, broadband.

Freq (GHz)	S_{21} (dB, deg)	
10.4000(G)	-6.46 /	-46.30
10.5000(G)	-5.66 /	-29.10
10.6000(G)	-5.16 /	-37.90
10.7000(G)	-7.40 /	-30.60
10.8000(G)	-5.24 /	-37.70
10.9000(G)	-7.39 /	-37.70
11.0000(G)	-5.79 /	-17.90
11.1000(G)	-6.08 /	-33.90
11.2000(G)	-7.62 /	-29.00
11.3000(G)	-6.34 /	-33.40
11.4000(G)	-7.98 /	-33.80
11.5000(G)	-6.89 /	-27.90
11.6000(G)	-6.57 /	-32.30
11.7000(G)	-6.80 /	-29.40
11.8000(G)	-6.67 /	-39.30
11.9000(G)	-7.94 /	-30.10
12.0000(G)	-6.19 /	-32.60
12.1000(G)	-7.42 /	-36.70
12.2000(G)	-5.94 /	-33.30
12.3000(G)	-6.93 /	-44.60
12.4000(G)	-7.64 /	-26.50
12.5000(G)	-6.18 /	-39.30
12.6000(G)	-8.01 /	-30.70
12.7000(G)	-5.34 /	-28.60
12.8000(G)	-8.71 /	-35.50
12.9000(G)	-8.64 /	-16.30
13.0000(G)	-7.14 /	-37.00
13.1000(G)	-8.75 /	-24.00
13.2000(G)	-6.77 /	-29.40
13.3000(G)	-10.61 /	-34.90
13.4000(G)	-8.93 /	-17.40
13.5000(G)	-8.78 /	-40.60
13.6000(G)	-10.49 /	-19.20
13.7000(G)	-6.68 /	-33.30
13.8000(G)	-11.17 /	-43.30
13.9000(G)	-8.74 /	-20.00
14.0000(G)	-8.94 /	-41.10
14.1000(G)	-9.94 /	-23.30
14.2000(G)	-6.36 /	-34.40
14.3000(G)	-9.74 /	-35.50
14.4000(G)	-7.79 /	-16.80
14.5000(G)	-8.89 /	-29.80
14.6000(G)	-8.71 /	-11.70
14.7000(G)	-7.57 /	-30.20
14.8000(G)	-10.95 /	-20.10
14.9000(G)	-8.02 /	-13.20
15.0000(G)	-10.95 /	-26.90
15.1000(G)	-9.74 /	-6.30
15.2000(G)	-8.19 /	-31.80
15.3000(G)	-11.71 /	-19.20
15.4000(G)	-8.67 /	-16.20
15.5000(G)	-11.87 /	-25.80
15.6000(G)	-9.25 /	-9.00
15.7000(G)	-9.13 /	-33.50
15.8000(G)	-11.57 /	-18.30
15.9000(G)	-8.86 /	-25.40

Figure 5. Teledyne Brown cloth (tan net), horizontal, broadband.

Freq (GHz)	S_{21} (dB, deg)	
16.0000(G)	-11.26 /	-26.80
16.1000(G)	-8.59 /	-7.90
16.2000(G)	-9.34 /	-22.20
16.3000(G)	-11.28 /	-10.70
16.4000(G)	-9.94 /	-16.70
16.5000(G)	-10.13 /	-7.40
16.6000(G)	-8.63 /	-7.40
16.7000(G)	-10.45 /	-11.60
16.8000(G)	-10.65 /	-5.30
16.9000(G)	-10.35 /	-11.40
17.0000(G)	-11.24 /	-1.60
17.1000(G)	-9.52 /	-5.80
17.2000(G)	-10.31 /	-13.60
17.3000(G)	-10.53 /	-5.30
17.4000(G)	-10.74 /	-7.00
17.5000(G)	-11.16 /	-3.60
17.6000(G)	-9.37 /	-5.40
17.7000(G)	-9.82 /	-13.70
17.8000(G)	-10.34 /	-3.10
17.9000(G)	-9.89 /	-8.50
18.0000(G)	-10.95 /	-1.90

Figure 6. Teledyne Brown cloth (tan net), horizontal, broadband.

Freq (GHz)	S_{21} (dB, deg)	
2.7000E+01	-3.7600E+00	-2.6500E+01
2.7100E+01	-4.1200E+00	-2.2200E+01
2.7200E+01	-3.9500E+00	-1.7800E+01
2.7300E+01	-3.0400E+00	-1.6900E+01
2.7400E+01	-2.2900E+00	-2.1500E+01
2.7500E+01	-2.8400E+00	-2.7900E+01
2.7600E+01	-3.8700E+00	-3.0400E+01
2.7700E+01	-4.5400E+00	-2.7500E+01
2.7800E+01	-4.7500E+00	-1.9000E+01
2.7900E+01	-3.3800E+00	-1.5600E+01
2.8000E+01	-2.9100E+00	-2.2600E+01
2.8100E+01	-3.4500E+00	-2.7900E+01
2.8200E+01	-4.1500E+00	-3.2500E+01
2.8300E+01	-4.7700E+00	-3.0400E+01
2.8400E+01	-4.6300E+00	-2.2500E+01
2.8500E+01	-3.8300E+00	-1.9100E+01
2.8600E+01	-2.9500E+00	-2.3500E+01
2.8700E+01	-2.7000E+00	-2.8800E+01
2.8800E+01	-3.8400E+00	-3.1200E+01
2.8900E+01	-4.7900E+00	-2.8400E+01
2.9000E+01	-4.9400E+00	-2.3000E+01
2.9100E+01	-3.7000E+00	-1.4700E+01
2.9200E+01	-2.2800E+00	-2.2000E+01
2.9300E+01	-2.7300E+00	-2.9900E+01
2.9400E+01	-3.8800E+00	-2.8100E+01
2.9500E+01	-4.4600E+00	-2.7000E+01
2.9600E+01	-5.0700E+00	-2.1300E+01
2.9700E+01	-3.8200E+00	-1.1900E+01
2.9800E+01	-2.7800E+00	-1.8300E+01
2.9900E+01	-3.2600E+00	-2.7800E+01
3.0000E+01	-4.1000E+00	-2.9600E+01
3.0100E+01	-5.1200E+00	-2.9100E+01
3.0200E+01	-5.8600E+00	-2.2600E+01
3.0300E+01	-4.5600E+00	-1.5300E+01
3.0400E+01	-2.6000E+00	-2.1500E+01
3.0500E+01	-3.2100E+00	-3.1000E+01
3.0600E+01	-4.2600E+00	-3.3600E+01
3.0700E+01	-4.8300E+00	-3.1400E+01
3.0800E+01	-5.2700E+00	-1.9600E+01
3.0900E+01	-3.7400E+00	-1.7200E+01
3.1000E+01	-2.8200E+00	-2.5800E+01
3.1100E+01	-3.2500E+00	-3.0900E+01
3.1200E+01	-3.8200E+00	-3.2400E+01
3.1300E+01	-4.9100E+00	-3.1900E+01
3.1400E+01	-6.0000E+00	-2.5300E+01
3.1500E+01	-3.7900E+00	-1.4000E+01

Figure 7. Teledyne Brown cloth (tan net), vertical, Ka-band.

Freq (GHz)	S_{21} (dB, deg)	
3.1600E+01	-3.0200E+00	-2.1700E+01
3.1700E+01	-3.1800E+00	-2.9400E+01
3.1800E+01	-4.3800E+00	-3.1500E+01
3.1900E+01	-5.4000E+00	-3.2300E+01
3.2000E+01	-6.0700E+00	-2.2900E+01
3.2100E+01	-4.6200E+00	-1.3100E+01
3.2200E+01	-3.3900E+00	-2.2400E+01
3.2300E+01	-3.9400E+00	-3.1800E+01
3.2400E+01	-4.7400E+00	-3.1000E+01
3.2500E+01	-5.1100E+00	-3.1500E+01
3.2600E+01	-6.2900E+00	-2.7600E+01
3.2700E+01	-5.2600E+00	-1.6500E+01
3.2800E+01	-3.4900E+00	-2.2000E+01
3.2900E+01	-3.5500E+00	-3.0900E+01
3.3000E+01	-4.2600E+00	-3.6900E+01
3.3100E+01	-5.6300E+00	-3.5700E+01
3.3200E+01	-6.5100E+00	-2.6100E+01
3.3300E+01	-4.7500E+00	-1.6600E+01
3.3400E+01	-3.4300E+00	-2.4900E+01
3.3500E+01	-4.1900E+00	-3.1400E+01
3.3600E+01	-4.7100E+00	-3.5100E+01
3.3700E+01	-5.2600E+00	-3.5300E+01
3.3800E+01	-6.0000E+00	-2.4200E+01
3.3900E+01	-5.1700E+00	-1.4600E+01
3.4000E+01	-3.9500E+00	-2.2900E+01
3.4100E+01	-4.4100E+00	-2.8100E+01
3.4200E+01	-4.7800E+00	-2.8800E+01
3.4300E+01	-6.0200E+00	-3.0500E+01
3.4400E+01	-6.6600E+00	-2.5700E+01
3.4500E+01	-5.6900E+00	-1.8200E+01
3.4600E+01	-4.5400E+00	-2.1000E+01
3.4700E+01	-5.0200E+00	-2.8400E+01
3.4800E+01	-6.0400E+00	-3.6600E+01
3.4900E+01	-7.6600E+00	-3.2300E+01
3.5000E+01	-7.5500E+00	-2.2500E+01
3.5100E+01	-6.0000E+00	-1.8300E+01
3.5200E+01	-4.6400E+00	-2.4800E+01
3.5300E+01	-4.6900E+00	-3.1900E+01
3.5400E+01	-5.2200E+00	-3.4200E+01
3.5500E+01	-6.7000E+00	-3.3200E+01
3.5600E+01	-7.3000E+00	-2.5100E+01
3.5700E+01	-6.3100E+00	-2.1500E+01
3.5800E+01	-4.6700E+00	-2.0400E+01
3.5900E+01	-4.4000E+00	-2.7700E+01
3.6000E+01	-5.3700E+00	-4.0600E+01
3.6100E+01	-6.9700E+00	-3.4600E+01

Figure 8. Teledyne Brown cloth (tan net), vertical, Ka-band.

Freq (GHz)	S_{21} (dB, deg)	
3.6200E+01	-6.9400E+00	-2.2600E+01
3.6300E+01	-6.2000E+00	-1.4900E+01
3.6400E+01	-4.9600E+00	-2.2800E+01
3.6500E+01	-4.8600E+00	-2.9500E+01
3.6600E+01	-5.7800E+00	-3.2500E+01
3.6700E+01	-7.5400E+00	-2.7800E+01
3.6800E+01	-7.5500E+00	-2.3700E+01
3.6900E+01	-6.5800E+00	-2.0400E+01
3.7000E+01	-5.1700E+00	-2.4900E+01
3.7100E+01	-5.3900E+00	-3.0100E+01
3.7200E+01	-6.2100E+00	-3.8700E+01
3.7300E+01	-7.3900E+00	-3.6500E+01
3.7400E+01	-7.2500E+00	-2.6200E+01
3.7500E+01	-6.8100E+00	-2.2800E+01
3.7600E+01	-5.8500E+00	-2.5800E+01
3.7700E+01	-4.7500E+00	-3.3300E+01
3.7800E+01	-6.0000E+00	-3.8600E+01
3.7900E+01	-7.1400E+00	-3.0800E+01
3.8000E+01	-6.9700E+00	-2.4700E+01
3.8100E+01	-5.9900E+00	-2.4800E+01
3.8200E+01	-5.9000E+00	-2.3000E+01
3.8300E+01	-5.6600E+00	-2.3700E+01
3.8400E+01	-6.0700E+00	-3.5000E+01
3.8500E+01	-7.2000E+00	-3.2000E+01
3.8600E+01	-6.6700E+00	-2.2900E+01
3.8700E+01	-7.0200E+00	-1.8700E+01
3.8800E+01	-6.9200E+00	-2.0300E+01
3.8900E+01	-5.8600E+00	-2.8500E+01
3.9000E+01	-6.6400E+00	-3.2500E+01
3.9100E+01	-8.1500E+00	-2.5400E+01
3.9200E+01	-8.1100E+00	-1.7600E+01
3.9300E+01	-7.3600E+00	-2.3000E+01
3.9400E+01	-7.2000E+00	-2.1300E+01
3.9500E+01	-6.1300E+00	-2.7700E+01
3.9600E+01	-9.4000E+00	1.0620E+02
3.9700E+01	-8.2600E+00	-2.7400E+01
3.9800E+01	-7.9500E+00	-2.7800E+01
3.9900E+01	-7.7300E+00	-2.4400E+01
4.0000E+01	-8.0600E+00	-2.3200E+01

Figure 9. Teledyne Brown cloth (tan net), vertical, Ka-band.

Freq (GHz)	S_{21} (dB, deg)	
2.7000E+01	-5.8500E+00	6.9999E-01
2.7100E+01	-6.5000E+00	1.5000E+00
2.7200E+01	-6.6000E+00	2.2000E+00
2.7300E+01	-5.9000E+00	1.1000E+01
2.7400E+01	-4.7100E+00	1.3600E+01
2.7500E+01	-4.4800E+00	1.7000E+00
2.7600E+01	-5.0400E+00	-2.8999E+00
2.7700E+01	-5.8400E+00	-1.4000E+00
2.7800E+01	-6.5700E+00	1.6000E+00
2.7900E+01	-6.6300E+00	6.6002E+00
2.8000E+01	-5.2400E+00	1.0100E+01
2.8100E+01	-4.4500E+00	4.7000E+00
2.8200E+01	-5.2400E+00	-3.2000E+00
2.8300E+01	-6.0800E+00	-4.5001E+00
2.8400E+01	-6.7500E+00	-9.0009E-01
2.8500E+01	-6.8800E+00	7.7000E+00
2.8600E+01	-5.7600E+00	8.8000E+00
2.8700E+01	-4.7100E+00	2.8000E+00
2.8800E+01	-4.8600E+00	-5.1999E+00
2.8900E+01	-5.8100E+00	-7.3000E+00
2.9000E+01	-7.0300E+00	-3.9999E+00
2.9100E+01	-7.1200E+00	7.0000E+00
2.9200E+01	-5.3000E+00	1.0100E+01
2.9300E+01	-3.8700E+00	1.0999E+00
2.9400E+01	-4.4200E+00	-4.8000E+00
2.9500E+01	-5.3600E+00	-8.2999E+00
2.9600E+01	-6.4600E+00	-7.2001E+00
2.9700E+01	-6.6600E+00	4.4000E+00
2.9800E+01	-5.3900E+00	9.7000E+00
2.9900E+01	-4.1400E+00	1.8999E+00
3.0000E+01	-4.3000E+00	-4.0001E+00
3.0100E+01	-5.1900E+00	-6.7000E+00
3.0200E+01	-6.4600E+00	-7.2000E+00
3.0300E+01	-7.0600E+00	5.9999E-01
3.0400E+01	-5.4500E+00	9.3000E+00
3.0500E+01	-3.8400E+00	4.8000E+00
3.0600E+01	-4.4200E+00	-7.9001E+00
3.0700E+01	-5.2400E+00	-6.5999E+00
3.0800E+01	-6.1000E+00	8.0002E-01
3.0900E+01	-6.4500E+00	4.7000E+00
3.1000E+01	-5.3700E+00	9.8000E+00
3.1100E+01	-4.1500E+00	4.0000E+00
3.1200E+01	-4.7700E+00	-5.6000E+00
3.1300E+01	-5.3400E+00	-9.7001E+00
3.1400E+01	-6.3300E+00	-1.3200E+01
3.1500E+01	-5.9200E+00	2.2001E+00

Figure 10. Teledyne Brown cloth (tan net), horizontal, Ka-band.

Freq (GHz)	S_{21} (dB, deg)	
3.1600E+01	-6.2000E+00	7.3000E+00
3.1700E+01	-4.2400E+00	2.9000E+00
3.1800E+01	-4.2800E+00	-7.7000E+00
3.1900E+01	-5.2900E+00	-1.2400E+01
3.2000E+01	-6.5600E+00	-1.1700E+01
3.2100E+01	-7.1700E+00	-1.9001E+00
3.2200E+01	-5.7900E+00	8.2000E+00
3.2300E+01	-4.0900E+00	2.8000E+00
3.2400E+01	-4.7900E+00	-3.7000E+00
3.2500E+01	-5.3500E+00	-9.0000E+00
3.2600E+01	-6.1100E+00	-1.0800E+01
3.2700E+01	-6.8300E+00	-1.9999E+00
3.2800E+01	-6.6100E+00	8.9000E+00
3.2900E+01	-4.9200E+00	1.5000E+00
3.3000E+01	-4.6300E+00	-8.7001E+00
3.3100E+01	-5.6200E+00	-1.2100E+01
3.3200E+01	-7.5400E+00	-1.0500E+01
3.3300E+01	-8.0200E+00	-7.2000E+00
3.3400E+01	-7.2300E+00	3.9000E+00
3.3500E+01	-4.9500E+00	6.1001E+00
3.3600E+01	-5.3200E+00	-7.2000E+00
3.3700E+01	-6.3100E+00	-1.7000E+01
3.3800E+01	-7.0300E+00	-1.6400E+01
3.3900E+01	-7.7600E+00	-7.0000E+00
3.4000E+01	-7.3100E+00	3.1000E+00
3.4100E+01	-5.5300E+00	2.2000E+00
3.4200E+01	-4.5000E+00	-7.6000E+00
3.4300E+01	-5.1500E+00	-1.3800E+01
3.4400E+01	-6.7000E+00	-1.4100E+01
3.4500E+01	-7.8100E+00	-9.2000E+00
3.4600E+01	-7.0800E+00	1.9988E-01
3.4700E+01	-4.7100E+00	9.0001E-01
3.4800E+01	-4.6000E+00	-9.1000E+00
3.4900E+01	-6.3700E+00	-1.5100E+01
3.5000E+01	-7.6000E+00	-1.4800E+01
3.5100E+01	-7.8600E+00	-6.0000E+00
3.5200E+01	-7.4900E+00	5.3000E+00
3.5300E+01	-5.7100E+00	3.5000E+00
3.5400E+01	-5.3100E+00	-8.4000E+00
3.5500E+01	-6.0300E+00	-1.2300E+01
3.5600E+01	-7.4200E+00	-1.1400E+01
3.5700E+01	-8.9400E+00	-8.9000E+00
3.5800E+01	-8.1000E+00	1.3999E+00
3.5900E+01	-6.3500E+00	7.1000E+00
3.6000E+01	-5.0500E+00	-6.5000E+00
3.6100E+01	-6.1300E+00	-2.0000E+01

Figure 11. Teledyne Brown cloth (tan net), horizontal, Ka-band.

Freq (GHz)	S_{21} (dB, deg)	
3.6200E+01	-7.9100E+00	-1.9400E+01
3.6300E+01	-8.8800E+00	-6.3000E+00
3.6400E+01	-8.2200E+00	1.0001E-01
3.6500E+01	-6.6100E+00	1.1000E+00
3.6600E+01	-5.7900E+00	-8.6000E+00
3.6700E+01	-6.1900E+00	-1.5600E+01
3.6800E+01	-7.9500E+00	-1.5300E+01
3.6900E+01	-8.5300E+00	-4.4000E+00
3.7000E+01	-8.5100E+00	-7.0001E-01
3.7100E+01	-6.9100E+00	4.5001E+00
3.7200E+01	-5.4700E+00	-3.7000E+00
3.7300E+01	-6.8500E+00	-1.5900E+01
3.7400E+01	-8.3600E+00	-1.7500E+01
3.7500E+01	-8.8500E+00	-6.1000E+00
3.7600E+01	-8.1400E+00	4.1000E+00
3.7700E+01	-7.2100E+00	8.1999E+00
3.7800E+01	-6.2200E+00	-6.8001E+00
3.7900E+01	-7.1700E+00	-1.7800E+01
3.8000E+01	-8.9400E+00	-1.2200E+01
3.8100E+01	-9.6900E+00	-8.0000E+00
3.8200E+01	-9.4100E+00	-3.1999E+00
3.8300E+01	-7.8400E+00	-2.9995E-01
3.8400E+01	-6.7900E+00	-3.6001E+00
3.8500E+01	-7.5400E+00	-1.4600E+01
3.8600E+01	-9.2000E+00	-1.8000E+01
3.8700E+01	-9.1500E+00	-1.0000E+01
3.8800E+01	-9.0500E+00	-1.7000E+00
3.8900E+01	-8.3900E+00	4.0000E+00
3.9000E+01	-6.6800E+00	-2.3000E+00
3.9100E+01	-6.9600E+00	-1.5900E+01
3.9200E+01	-8.6700E+00	-1.2100E+01
3.9300E+01	-9.6100E+00	-6.9995E-01
3.9400E+01	-8.5600E+00	2.9000E+00
3.9500E+01	-7.5900E+00	2.6999E+00
3.9600E+01	-7.5900E+00	2.6999E+00
3.9700E+01	-9.6500E+00	1.3110E+02
3.9800E+01	-9.7600E+00	-1.2800E+01
3.9900E+01	-9.8100E+00	-6.3000E+00
4.0000E+01	-9.4600E+00	1.3000E+00

Figure 12. Teledyne Brown cloth (tan net), horizontal, Ka-band.

Freq (GHz)	S_{21} (dB, deg)	
5.0000(G)	-7.24 /	12.20
5.1000(G)	-6.68 /	15.70
5.2000(G)	-7.77 /	-1.80
5.3000(G)	-7.69 /	15.90
5.4000(G)	-6.49 /	15.80
5.5000(G)	-8.34 /	17.30
5.6000(G)	-7.02 /	19.50
5.7000(G)	-7.75 /	1.60
5.8000(G)	-7.69 /	18.30
5.9000(G)	-5.74 /	15.10
6.0000(G)	-8.05 /	19.50
6.1000(G)	-6.50 /	21.50
6.2000(G)	-7.12 /	-4.90
6.3000(G)	-7.57 /	16.20
6.4000(G)	-5.06 /	13.60
6.5000(G)	-8.11 /	15.10
6.6000(G)	-6.34 /	21.20
6.7000(G)	-5.50 /	3.00
6.8000(G)	-6.61 /	22.70
6.9000(G)	-5.11 /	23.00
7.0000(G)	-7.99 /	19.90
7.1000(G)	-5.71 /	26.90
7.2000(G)	-6.01 /	6.70
7.3000(G)	-7.25 /	30.10
7.4000(G)	-5.40 /	22.30
7.5000(G)	-8.88 /	21.60
7.6000(G)	-5.91 /	29.20
7.7000(G)	-5.85 /	3.10
7.8000(G)	-7.22 /	27.10
7.9000(G)	-5.01 /	19.40
8.0000(G)	-7.58 /	19.00
8.1000(G)	-5.25 /	23.00
8.2000(G)	-4.88 /	6.20
8.3000(G)	-6.23 /	24.20
8.4000(G)	-4.48 /	20.30
8.5000(G)	-6.23 /	21.60
8.6000(G)	-4.63 /	24.30
8.7000(G)	-5.80 /	15.30
8.8000(G)	-6.34 /	31.40
8.9000(G)	-5.45 /	17.50
9.0000(G)	-7.15 /	26.90
9.1000(G)	-4.74 /	24.10
9.2000(G)	-6.72 /	19.00
9.3000(G)	-5.22 /	32.70
9.4000(G)	-6.00 /	24.30
9.5000(G)	-5.67 /	34.80
9.6000(G)	-4.52 /	19.00
9.7000(G)	-6.01 /	18.90
9.8000(G)	-4.09 /	21.30
9.9000(G)	-5.58 /	16.00

Figure 13. T.B.E. S726, vertical, broadband.

Freq (GHz)	S_{21} (dB, deg)	
10.0000(G)	-4.75 /	23.90
10.1000(G)	-4.11 /	15.50
10.2000(G)	-5.46 /	19.00
10.3000(G)	-5.30 /	18.20
10.4000(G)	-5.38 /	18.90
10.5000(G)	-4.08 /	19.90
10.6000(G)	-4.86 /	16.80
10.7000(G)	-4.96 /	24.20
10.8000(G)	-4.52 /	11.60
10.9000(G)	-4.74 /	23.20
11.0000(G)	-3.22 /	24.20
11.1000(G)	-4.68 /	21.90
11.2000(G)	-4.30 /	27.70
11.3000(G)	-4.73 /	18.50
11.4000(G)	-4.65 /	25.10
11.5000(G)	-4.00 /	19.80
12.0000(G)	-3.96 /	17.90
12.1000(G)	-5.12 /	25.90
12.2000(G)	-4.09 /	16.50
12.3000(G)	-5.58 /	-73.80
12.4000(G)	-2.44 /	101.20
12.5000(G)	-4.05 /	11.60
12.6000(G)	-4.81 /	21.90
12.7000(G)	-3.07 /	11.30
12.8000(G)	-4.91 /	17.70
12.9000(G)	-2.69 /	30.90
13.0000(G)	-4.53 /	16.00
13.1000(G)	-4.75 /	30.00
13.2000(G)	-3.36 /	13.70
13.3000(G)	-5.50 /	24.10
13.4000(G)	-2.98 /	26.00
13.5000(G)	-5.17 /	14.60
13.6000(G)	-4.64 /	31.00
13.7000(G)	-3.55 /	9.80
13.8000(G)	-6.48 /	17.70
13.9000(G)	-3.44 /	23.50
14.0000(G)	-5.48 /	14.30
14.1000(G)	-4.56 /	24.30
14.2000(G)	-4.03 /	6.60
14.3000(G)	-4.88 /	20.80
14.4000(G)	-2.87 /	20.80
14.5000(G)	-4.93 /	16.70
14.6000(G)	-3.34 /	22.20
14.7000(G)	-3.20 /	5.70
14.8000(G)	-4.79 /	22.90
14.9000(G)	-2.54 /	16.00
15.0000(G)	-4.96 /	14.90
15.1000(G)	-2.63 /	22.90
15.2000(G)	-3.84 /	11.20
15.3000(G)	-5.04 /	29.00
15.4000(G)	-3.64 /	18.30

Figure 14. T.B.E. S726, vertical, broadband.

Freq (GHz)	S_{21} (dB, deg)	
15.5000(G)	-5.92 /	19.10
15.6000(G)	-3.08 /	21.80
15.7000(G)	-4.52 /	10.30
15.8000(G)	-4.39 /	26.10
15.9000(G)	-4.33 /	13.70
16.0000(G)	-4.77 /	19.30
16.1000(G)	-2.81 /	17.30
16.2000(G)	-4.48 /	13.00
16.3000(G)	-4.49 /	19.50
16.4000(G)	-4.16 /	13.70
16.5000(G)	-3.57 /	20.30
16.6000(G)	-2.62 /	14.60
16.7000(G)	-3.70 /	20.10
16.8000(G)	-3.59 /	23.40
16.9000(G)	-4.31 /	19.70
17.0000(G)	-3.59 /	25.60
17.1000(G)	-3.04 /	20.40
17.2000(G)	-4.45 /	17.70
17.3000(G)	-3.43 /	17.70
17.4000(G)	-3.40 /	14.70
17.5000(G)	-3.25 /	22.20
17.6000(G)	-3.04 /	16.90
17.7000(G)	-4.79 /	14.00
17.8000(G)	-4.11 /	18.20
17.9000(G)	-4.31 /	14.30
18.0000(G)	-3.64 /	23.30

Figure 15. T.B.E. S726, vertical, broadband.

Freq (GHz)	S_{21} (dB, deg)	
5.0000(G)	-4.50 /	7.50
5.1000(G)	-3.96 /	9.30
5.2000(G)	-4.76 /	-5.40
5.3000(G)	-4.98 /	8.10
5.4000(G)	-4.09 /	8.90
5.5000(G)	-5.41 /	9.40
5.6000(G)	-4.64 /	10.40
5.7000(G)	-5.21 /	-3.30
5.8000(G)	-5.25 /	8.50
5.9000(G)	-3.86 /	7.00
6.0000(G)	-5.78 /	9.70
6.1000(G)	-4.68 /	12.80
6.2000(G)	-4.95 /	-7.80
6.3000(G)	-5.53 /	6.70
6.4000(G)	-3.65 /	6.70
6.5000(G)	-5.86 /	7.70
6.6000(G)	-4.53 /	13.30
6.7000(G)	-3.75 /	-1.60
6.8000(G)	-4.62 /	13.20
6.9000(G)	-3.61 /	15.40
7.0000(G)	-5.71 /	12.20
7.1000(G)	-3.99 /	18.80
7.2000(G)	-4.03 /	2.30
7.3000(G)	-4.95 /	20.40
7.4000(G)	-3.56 /	15.60
7.5000(G)	-6.18 /	14.40
7.6000(G)	-3.95 /	20.50
7.7000(G)	-3.70 /	.40
7.8000(G)	-4.87 /	16.90
7.9000(G)	-3.20 /	12.10
8.0000(G)	-5.07 /	10.50
8.1000(G)	-3.38 /	13.70
8.2000(G)	-3.05 /	-.50
8.3000(G)	-4.09 /	10.20
8.4000(G)	-2.82 /	9.80
8.5000(G)	-4.22 /	9.00
8.6000(G)	-3.12 /	12.10
8.7000(G)	-3.70 /	4.20
8.8000(G)	-4.35 /	15.10
8.9000(G)	-3.76 /	7.50
9.0000(G)	-5.11 /	13.20
9.1000(G)	-3.67 /	11.80
9.2000(G)	-4.76 /	7.20
9.3000(G)	-4.07 /	17.50
9.4000(G)	-4.77 /	14.30
9.5000(G)	-4.38 /	21.50
9.6000(G)	-3.67 /	9.80
9.7000(G)	-4.69 /	9.90
9.8000(G)	-3.27 /	12.50
9.9000(G)	-4.54 /	8.80
10.0000(G)	-3.76 /	15.00

Figure 16. T.B.E. S726, horizontal, broadband.

Freq (GHz)	S_{21} (dB, deg)	
10.1000(G)	-3.19 /	8.10
10.2000(G)	-4.11 /	10.20
10.3000(G)	-4.25 /	9.40
10.4000(G)	-4.10 /	10.60
10.5000(G)	-3.32 /	9.50
10.6000(G)	-3.79 /	9.40
10.7000(G)	-4.01 /	14.30
10.8000(G)	-3.89 /	5.40
10.9000(G)	-3.78 /	13.40
11.0000(G)	-2.57 /	13.80
11.1000(G)	-3.41 /	14.70
11.2000(G)	-3.39 /	17.70
11.3000(G)	-3.75 /	11.20
11.4000(G)	-3.56 /	16.00
11.5000(G)	-3.04 /	13.10
12.0000(G)	-2.96 /	12.60
12.1000(G)	-5.20 /	2.50
12.2000(G)	-4.76 /	11.90
12.3000(G)	-3.72 /	3.00
12.4000(G)	-4.98 /	-8.70
12.5000(G)	-3.03 /	7.80
12.6000(G)	-3.76 /	13.60
12.7000(G)	-2.38 /	7.20
12.8000(G)	-3.77 /	9.20
12.9000(G)	-2.09 /	21.20
13.0000(G)	-3.14 /	9.50
13.1000(G)	-3.56 /	18.30
13.2000(G)	-2.38 /	8.50
13.3000(G)	-3.90 /	14.50
13.4000(G)	-2.21 /	18.30
13.5000(G)	-3.75 /	7.50
13.6000(G)	-3.54 /	20.80
13.7000(G)	-2.42 /	5.10
13.8000(G)	-4.80 /	11.40
13.9000(G)	-2.41 /	16.50
14.0000(G)	-4.12 /	8.40
14.1000(G)	-3.62 /	18.20
14.2000(G)	-3.04 /	4.30
14.3000(G)	-4.10 /	13.90
14.4000(G)	-2.40 /	15.50
14.5000(G)	-3.72 /	11.10
14.6000(G)	-2.74 /	16.10
14.7000(G)	-2.72 /	4.40
14.8000(G)	-3.73 /	17.80
14.9000(G)	-1.98 /	11.70
15.0000(G)	-3.60 /	11.60
15.1000(G)	-1.96 /	16.60
15.2000(G)	-2.88 /	8.70
15.3000(G)	-3.45 /	22.30
15.4000(G)	-2.54 /	13.70
15.5000(G)	-4.26 /	15.60
15.6000(G)	-2.30 /	16.70
15.7000(G)	-3.21 /	8.00
15.8000(G)	-3.04 /	19.50
15.9000(G)	-2.80 /	10.70

Figure 17. T.B.E. S726, horizontal, broadband.

Freq (GHz)	S_{21} (dB, deg)	
16.0000(G)	-3.44 /	14.30
16.1000(G)	-1.93 /	11.70
16.2000(G)	-3.03 /	8.60
16.3000(G)	-3.28 /	15.00
16.4000(G)	-2.84 /	10.00
16.5000(G)	-2.75 /	13.50
16.6000(G)	-1.69 /	9.60
16.7000(G)	-2.51 /	16.00
16.8000(G)	-2.46 /	17.80
16.9000(G)	-3.16 /	14.20
17.0000(G)	-2.47 /	19.20
17.1000(G)	-2.11 /	14.80
17.2000(G)	-3.24 /	14.40
17.3000(G)	-2.29 /	14.20
17.4000(G)	-2.23 /	10.90
17.5000(G)	-2.05 /	17.10
17.6000(G)	-1.81 /	12.80
17.7000(G)	-3.33 /	12.60
17.8000(G)	-2.70 /	13.70
17.9000(G)	-2.94 /	10.80
18.0000(G)	-2.13 /	18.00

Figure 18. T.B.E. S726, horizontal, broadband.